

What is claimed is:

1 1. A method for communications resource allocation for
2 a wireless communications system having a total system
3 bandwidth, comprising the steps of:
4 dividing a service area into a plurality of
5 sectors;
6 positioning a first set of base station antennas
7 within a first set of sectors, said first set of
8 antennas having main beams set at a first set of angles,
9 and where each antenna of said first set of antennas
10 corresponds to a sector within said first set of
11 sectors;
12 positioning a second set of base station antennas
13 within a second set of sectors adjacent to said first
14 set of sectors, said second set of antennas having main
15 beams set at a second set of angles, and where each
16 antenna of said second set of antennas corresponds to a
17 sector within said second set of sectors; and
18 assigning each sector in said first and second set
19 of sectors a portion of the total system bandwidth.

1 2. The method of claim 1, wherein said first set of
2 angles are 30 degrees, 150 degrees and 270 degrees, and
3 said second set of angles are 90 degrees, 210 degrees
4 and 330 degrees.

1 3. The method of claim 2, wherein beamwidths for said
2 first and second set of antennas are within a range of
3 50 degrees to 70 degrees.

1 4. The method of claim 1, wherein said each angle of
2 said second set of angles is 60 degrees apart from each
3 angle of said first set of angles.

1 5. The method of claim 1, wherein said first and
2 second set of sectors each have three sectors, with each
3 sector having a base station antenna.

1 6. The method of claim 1, wherein said system has a
2 frequency reuse factor of $K = 2$.

1 7. An apparatus for a wireless communications system.
2 having a service area divided into a plurality of
3 sectors, comprising:

4 a first set of base station antennas within a first
5 set of sectors, said first set of antennas having main
6 beams set at a first set of angles, and where each
7 antenna of said first set of antennas corresponds to a
8 sector within said first set of sectors; and

9 a second set of base station antennas within a
10 second set of sectors adjacent to said first set of
11 sectors, said second set of antennas having main beams
12 set at a second set of angles, and where each antenna of
13 said second set of antennas corresponds to a sector
14 within said second set of sectors.

1 8. The apparatus of claim 7, wherein said first set of
2 angles are 30 degrees, 150 degrees and 270 degrees, and
3 said second set of angles are 90 degrees, 210 degrees
4 and 330 degrees.

1 9. The apparatus of claim 8, wherein beamwidths for
2 said first and second set of antennas are within a range
3 of 50 degrees to 70 degrees.

1 10. The apparatus of claim 7, wherein said each angle
2 of said second set of angles is 60 degrees apart from
3 each angle of said first set of angles.

1 11. The apparatus of claim 7, wherein said first and
2 second cell each have three sectors, with each sector
3 having a base station antenna.

1 12. The apparatus of claim 7, wherein said system has a
2 frequency reuse factor of $K = 2$.

1 13. A method for communicating signals over a wireless
2 communications system having a service area divided into
3 a plurality of sectors, comprising the steps of:

4 communicating signals over a first set of base
5 station antennas within a first set of sectors, said
6 first set of antennas having main beams set at a first
7 set of angles, and where each antenna of said first set
8 of antennas corresponds to a sector within said first
9 set of sectors; and

10 communicating signals over a second set of base
11 station antennas within a second set of sectors adjacent
12 to said first set of sectors, said second set of
13 antennas having main beams set at a second set of
14 angles, and where each antenna of said second set of
15 antennas corresponds to a sector within said second set
16 of sectors.

1 14. An apparatus for communications resource allocation
2 for a wireless communications system having a service
3 area divided into a plurality of sectors, and also
4 having a total system bandwidth, comprising:
5 a first set of base station antennas within a first
6 set of sectors, said first set of antennas having main
7 beams set at a first set of angles, and where each
8 antenna of said first set of antennas corresponds to a
9 sector within said first set of sectors;
10 a second set of base station antennas within a
11 second set of sectors adjacent to said first set of
12 sectors, said second set of antennas having main beams
13 set at a second set of angles, and where each antenna of
14 said second set of antennas corresponds to a sector
15 within said second set of sectors; and
16 means for assigning each sector in said first and
17 second set of sectors a portion of the total system
18 bandwidth.

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1 15. An apparatus for a wireless communications system
2 having a service area divided into a plurality of
3 sectors, comprising:
4 a switching network to provide switching for a
5 plurality of base stations;
6 a first set of base stations operably coupled to
7 said switching network for receiving signals over said
8 network, said first set of base stations having antennas
9 within a first set of sectors, said antennas having main
10 beams set at a first set of angles, and where each
11 antenna corresponds to a sector within said first set of
12 sectors;
13 a second set of base stations operably coupled to
14 said switching network for receiving signals over said
15 network, said second set of base stations having
16 antennas within a second set of sectors adjacent to said
17 first set of sectors, said antennas having main beams
18 set at a second set of angles, and where each antenna
19 corresponds to a sector within said second set of
20 sectors; and
21 transceivers operably coupled to said antennas for
22 communicating said signals over said main beams for said
23 antennas.

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